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**Project Report:** The Virtual Planetary Laboratory – The Life Modules

Des Marais, D.J., Allamandola, L.A., Benner., S.A., Boss, A.P., Deamer, D., Falkowski, P.G., Farmer, J.D., Hedges, S.B., Jakosky, B.M., Knoll, A.H., Liskowsky, D.R., Meadows, V.S., Meyer, M.A., Pilcher, C.B., Nealson, K.H., Spormann, A.M., Trent , J.D., Turner, W.W., Woolf, N.J. & Yorke, H.W. (2003). The Astrobiology Roadmap. *Astrobiology*, 3(2): 219–235.

Johnson, O.J., Rye, R., Namsaraev, Z.B., Han, S-K., Lanoil, B.D. & Nealson, K.H. (2004). Microbial ecology of ultrabasic springs on the actively serpentinizing Cedars Peridotite, Sonoma County, California [Abstract]. Southern California Geobiology Symposium, California Institute of Technology, Pasadena, CA.

Kasting, J.F. (2003). The origins of water on Earth. *Scientific American*, Special Edition, 13(3): 28–33.

Kasting, J.F. (2003). [Review of the book, Snowball Earth: The story of the great global catastrophe that spawned life as we know it by Gabrielle Walker.] *Bulletin of the American Meteorological Society*, 84:1581–1584.

Kasting, J.F. & Catling, D. (2004). Evolution of a habitable planet. *Annual Review of Astronomy and Astrophysics*, 41: 429–463.

Kharecha, P., Kasting, J.F. & Siefert, J.L. (Submitted, 2004). Predicting the biogenic methane flux and productivity of the Archean biosphere. *Geobiology*.

Kharecha, P., Kasting, J.F., & Siefert, J.L. (2004). Predicting the biogenic methane flux and productivity of the Archean biosphere [Abstract]. AbSciCon 2004, NASA Ames Research Center, Moffett Field, CA. *International Journal of Astrobiology*, Supplement 1 (March): 40.

Kiang, N.Y., Friend, A.D., Moorcroft, P.R., Ni-Meister, W., Aleinov, I. (2004). Modeling dynamic vegetation for decadal to century climate change studies [Abstract]. Department of Energy, Scientific Discovery through Advanced Computing (SciDac), PI Meeting, Charleston, Virginia.

Kiang, N.Y., Friend, A.D., Aleinov, I., Koster, R.D., & Moorcroft, P.R. (2004). A dynamic global vegetation model with biophysics, biogeochemistry, and biogeography suitable for coupling with atmospheric GCM's for decadal to century scale studies [Abstract]. American Geophysical Union, 2004 Spring Meeting, Montreal, Canada. Abstract #B23A-01.

Pollard, D. and J.F. Kasting (submitted, 2004) Snowball Earth: A thin–ice model with flowing sea glaciers. *Journal of Geophysical Research*.

Rye, R., Johnson, O.J. & Nealson, K.H. (2004). Biology and water chemistry of several hyperalkaline springs emerging from mantle–like rock [Abstract]. AbSciCon 2004, NASA Ames Research Center, Moffett Field, CA. *International Journal of Astrobiology*, Supplement 1 (March): 67.

Souza-Egipsy, V., Corsetti, F., Nealson, K.H. & Rye, R. (2003). Abiogenic layered carbonates associated with serpentinization: Why Martian stromatolites might not be fossils [Abstract]. Third European Workshop on Exo/Astrobiology. Mars: The Search for Life, Madrid Spain, November, 2003.